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Helicodochium, a new microfungus from submerged wood in Brazil

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Abstract — An interesting helicosporic fungus collected on submerged wood in the Brazilian Amazon, 'Área de Proteção Ambiental Ilha do Combu', Brazil, is described and illustrated. *Helicodochium amazonicum* gen. & sp. nov. is characterized by sporodochial conidiomata, macronematous branched very pale brown to subhyaline conidiophores, and conidiogenous cells that produce helicoid multiseptate smooth hyaline conidia.

Key words — asexual fungi, taxonomy, freshwater

Introduction

Saprobic hyphomycetes are highly diverse on plant material, and many new genera or species have recently been discovered (e.g. Castañeda-Ruíz et al. 2009, 2012, Zhang et al. 2009, 2011, Ma et al. 2011, Cruz et al. 2012, Ren et al. 2012). Taking into account its great geographical and environmental variety, the Brazilian Amazon is considered an important reservoir of biodiversity. However, its mycobiota, especially microfungi, is poorly known. During a mycological survey of fungi associated with submerged litter at Brazilian Amazon forest, an interesting fungus was collected from submerged wood. The specimen, which differed remarkably from previously described asexual genera, is described here in a new genus.

Samples of submerged litter were placed in paper and plastic bags, taken to the laboratory, and prepared according to Castañeda-Ruiz (2005). Mounts were prepared in PVL (polyvinyl alcohol, lactic acid, phenol) and measurements

were made at ×1000. Micrographs were obtained with an Olympus microscope (model BX51) equipped with bright field and Nomarski interference optics. The type specimen is deposited in the Herbarium of Universidade Estadual de Feira de Santana (HUEFS).

Taxonomy

Helicodochium J.S. Monteiro, R.F. Castañeda, A.C. Cruz & Gusmão, **gen. nov.**

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Differs from *Vanbeverwijkia* by monoblastic conidiogenous cells and from *Everhartia* by differentiated dry conidiomata, macronematous conidiophores, and pseudoparenchymatous stromata.

Type Species: *Helicodochium amazonicum* J.S. Monteiro et al.

Etymology: *Helico-*, referring to the helicoid conidia + *-dochium*, referring to sporodochial conidiomata.

Asexual fungus. Colonies on the natural substrate effuse, pale pinkish. Mycelium mostly immersed. Conidiomata sporodochial, apothecium-like, dry, scattered, pinkish to white, consisting of numerous conidiophores arising from a stroma of globose, thick-walled, pale brown cells with an umbilicate centre. Conidiophores macronematous, erect, branched, septate, pale brown, arising from a thick-walled, pale brown, pseudoparenchymatous stromata with globose texture. Conidiogenous cells monoblastic, integrated, determinate, terminal, pale brown to hyaline. Conidial secession schizolytic. Conidia solitary, coiled, planate, pluri-septate, hyaline.

Helicodochium amazonicum J.S. Monteiro, R.F. Castañeda, A.C. Cruz & Gusmão, **sp. nov.** Plate 1

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Differs from *Vanbeverwijkia spirospora* by monoblastic conidiogenous cells and from *Everhartia* spp. by differentiated apothecium–like to infundibuliform dry conidiomata and macronematous conidiophores that arise from a pseudoparenchymatous stromata.

Type: Brazil, Pará, Belém, Área de Proteção Ambiental Ilha do Combu, 1°25′S 48°27′W, on submerged wood, 18.Oct.2012, coll. J.S. Monteiro (**Holotype:** HUEFS 194251; **Isotype:** HUEFS 194252).

Etymology: Latin, *amazonicum*, referring to the locality of the type specimen.

Colonies on the natural substrate, effuse, pale pinkish. Mycelium mostly immersed. Hyphae septate, 2–4 µm diam, branched, forming a pseudoparenchymatous stroma with thick-walled, smooth, pale brown, 5–10 µm diam cells in a textura globosa. Conidiomata sporodochial, apothecium-like, incurved at the centre, superficial, scattered or in groups, pale pink or white, glistening, dry, 63–100 µm long and 128–150 µm wide. Conidiophores macronematous, erect, more or less dichotomous branched below, arising

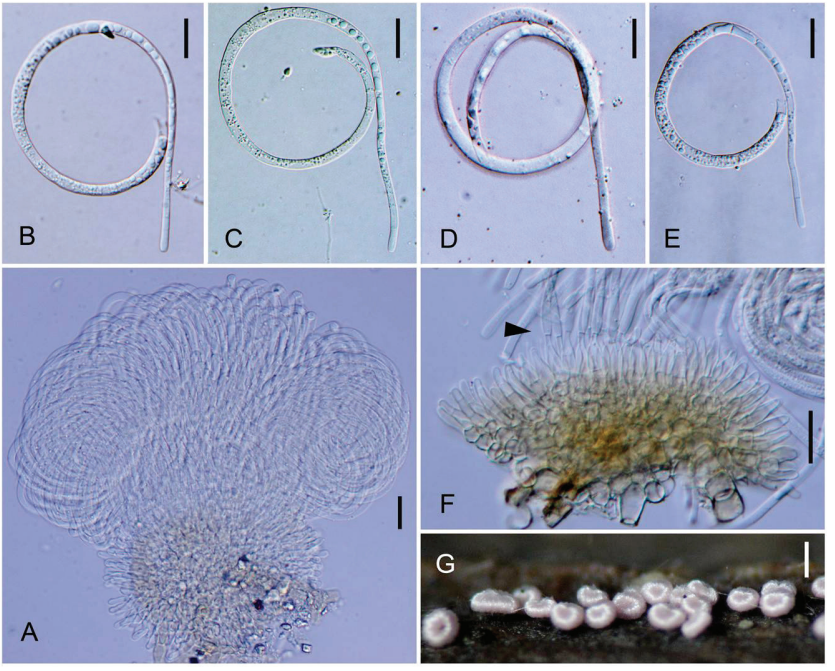

Plate. 1. *Helicodochium amazonicum* (holotype HUEFS 194251). A. Sporodochium. B–E. Conidia. F. Conidia attached to the conidiogenous cells (arrow). G. Sporodochia on the substratum. Scale bars: A–F = 20 µm, G = 100 µm.

from subglobose stromatic cells, 6–10 × 5–7 µm; 1–4-septate, 13–20 × 3–5 µm, smooth, pale brown at the base, hyaline towards the apex. Conidiogenous cells monoblastic, cylindrical. integrated, determinate, terminal, rounded to sub-truncated at the apex, 6–10 × 3–4 µm, pale brown. Conidial secession schizolytic. Conidia acrogenous, solitary, 20–33-septate, helicoid, 1½–2 times coiled, 70–82.5 µm diam, planate, slightly attenuate and subtruncate at the base, 112.5–145 × 4–6 µm, 3–4 µm wide at the base; rounded at the apex, 3–4 µm wide, smooth, hyaline forming a compact, incurved cluster towards the centre of the conidiomata.

Note: Seifert et al. (2011) described seven helicosporous genera with sporodochial conidiomata. Among these hyphomycetous fungi, only *Everhartia* Sacc. & Ellis (Yanna et al. 2000) and *Vanbeverwijkia* Agnihothr. (Agnihothrudu 1961) share morphologically comparable sporodochia, conidiogenous cells, and conidia with *Helicodochium*. However *Everhartia* has gelatinous sporodochia with micronematous, unbranched (or poorly branched) conidiophores, lacking

pseudoparenchymatous stromata and conidia composed of long chains of cuboid to globose cells. The monotypic genus *Vanbeverwijkia* is characterized by phialidic conidiogenous cells (Goos 1987, Shearer & Crane 1971), although thallic disarticulation was described by Agnihothrudu (1961). Neither developmental pattern is observed in *Helicodochium* conidia.

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